



## SEQUENCE LISTING

<110> SALONEN, Jukka T. et al.  
<120> A DNA MOLECULE ENCODING A VARIANT PARAOXONASE AND USES THEREOF  
<130> 0933-0216P  
<140> US 10/691,562  
<141> 2003-10-24  
<150> US 09/811,673  
<151> 2001-03-20  
<160> 20  
<170> PatentIn version 3.1  
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<223> Coding sequence for variant human paraoxonase (PON1) protein

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ttc agg aac cac cag tct tct tac caa aca cga ctt aat gct ctc cga 96  
Phe Arg Asn His Gln Ser Ser Tyr Gln Thr Arg Leu Asn Ala Leu Arg  
20 25 30  
gag gta caa ccc gta gaa ctt cct aac tgt aat tta gtt aaa gga atc 144  
Glu Val Gln Pro Val Glu Leu Pro Asn Cys Asn Leu Val Lys Gly Ile  
35 40 45  
gaa act ggc tct gaa gac atg gag ata ctg cct aat gga ctg gct ttc 192  
Glu Thr Gly Ser Glu Asp Met Glu Ile Leu Pro Asn Gly Leu Ala Phe  
50 55 60  
att agc tct gga tta aag tat cct gga ata aag agc ttc aac ccc aac 240  
Ile Ser Ser Gly Leu Lys Tyr Pro Gly Ile Lys Ser Phe Asn Pro Asn  
65 70 75 80  
agt cct gga aaa ata ctt ctg atg gac ctg aat gaa gaa gat cca aca 288  
Ser Pro Gly Lys Ile Leu Leu Met Asp Leu Asn Glu Glu Asp Pro Thr  
85 90 95  
gtg ttg gaa ttg ggg gtc act gga agt aaa ttt gat gta tct tca ttt 336  
Val Leu Glu Leu Gly Val Thr Gly Ser Lys Phe Asp Val Ser Ser Phe  
100 105 110  
aac cct cat ggg att agc aca ttc aca gat gaa gat aat gcc atg tac 384  
Asn Pro His Gly Ile Ser Thr Phe Thr Asp Glu Asp Asn Ala Met Tyr  
115 120 125  
ctc ctg gtg gtg aac cat cca gat gcc aag tcc aca gtg gag ttg ttt 432  
Leu Leu Val Val Asn His Pro Asp Ala Lys Ser Thr Val Glu Leu Phe  
130 135 140

|   |      |
|---|------|
| aaa ttt caa gaa gaa gaa aaa tcg ctt ttg cat cta aaa acc atc aga | 480  |
| Lys Phe Gln Glu Glu Glu Lys Ser Leu Leu His Leu Lys Thr Ile Arg |      |
| 145 150 155 160   |      |
| cat aaa ctt ctg cct aat ttg aat gat att gtt gct gtg gga cct gag | 528  |
| His Lys Leu Leu Pro Asn Leu Asn Asp Ile Val Ala Val Gly Pro Glu |      |
| 165 170 175   |      |
| cac ttt tat ggc aca aat gat cac tat ttt ctt gac ccc tac tta caa | 576  |
| His Phe Tyr Gly Thr Asn Asp His Tyr Phe Leu Asp Pro Tyr Leu Gln |      |
| 180 185 190   |      |
| tcc tgg gag atg tat ttg ggt tta gcg tgg tcg tat gtt gtc tac tat | 624  |
| Ser Trp Glu Met Tyr Leu Gly Leu Ala Trp Ser Tyr Val Val Tyr Tyr |      |
| 195 200 205   |      |
| agt cca agt gaa gtt cga gtg gtg gca gaa gga ttt gat ttt gct aat | 672  |
| Ser Pro Ser Glu Val Arg Val Val Ala Glu Gly Phe Asp Phe Ala Asn |      |
| 210 215 220   |      |
| gga atc aac att tca ccc gat ggc aag tat gtc tat ata gct gag ttg | 720  |
| Gly Ile Asn Ile Ser Pro Asp Gly Lys Tyr Val Tyr Ile Ala Glu Leu |      |
| 225 230 235 240   |      |
| ctg gct cat aag att cat gtg tat gaa aag cat gct aat tgg act tta | 768  |
| Leu Ala His Lys Ile His Val Tyr Glu Lys His Ala Asn Trp Thr Leu |      |
| 245 250 255   |      |
| act cca ttg aag tcc ctt gac ttt aat acc ctc gtg gat aac ata tct | 816  |
| Thr Pro Leu Lys Ser Leu Asp Phe Asn Thr Leu Val Asp Asn Ile Ser |      |
| 260 265 270   |      |
| gtg gat cct gag aca gga gac ctt tgg gtt gga tgc cat ccc aat ggc | 864  |
| Val Asp Pro Glu Thr Gly Asp Leu Trp Val Gly Cys His Pro Asn Gly |      |
| 275 280 285   |      |
| atg aaa atc ttc ttc tat gac tca gag aat cct cct gca tca gag gtg | 912  |
| Met Lys Ile Phe Phe Tyr Asp Ser Glu Asn Pro Pro Ala Ser Glu Val |      |
| 290 295 300   |      |
| ctt cga atc cag aac att cta aca gaa gaa cct aaa gtg aca cag gtt | 960  |
| Leu Arg Ile Gln Asn Ile Leu Thr Glu Glu Pro Lys Val Thr Gln Val |      |
| 305 310 315 320   |      |
| tat gca gaa aat ggc aca gtg ttg caa ggc agt aca gtt gcc tct gtg | 1008 |
| Tyr Ala Glu Asn Gly Thr Val Leu Gln Gly Ser Thr Val Ala Ser Val |      |
| 325 330 335   |      |
| tac aaa ggg aaa ctg ctg att ggc aca gtg ttt cac aaa gct ctt tac | 1056 |
| Tyr Lys Gly Lys Leu Leu Ile Gly Thr Val Phe His Lys Ala Leu Tyr |      |
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| tgt gag ctc taa   | 1068 |
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 Glu Val Gln Pro Val Glu Leu Pro Asn Cys Asn Leu Val Lys Gly Ile  
 35 40 45  
 Glu Thr Gly Ser Glu Asp Met Glu Ile Leu Pro Asn Gly Leu Ala Phe

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| Ile Ser Ser Gly Leu Lys Tyr Pro Gly Ile Lys Ser Phe Asn Pro Asn |     |     |     |     |
| 65  |     | 70  |     | 75  |
| Ser Pro Gly Lys Ile Leu Leu Met Asp Leu Asn Glu Glu Asp Pro Thr |     |     |     |     |
|   | 85  |     | 90  | 95  |
| Val Leu Glu Leu Gly Val Thr Gly Ser Lys Phe Asp Val Ser Ser Phe |     |     |     |     |
|   | 100 |     | 105 | 110 |
| Asn Pro His Gly Ile Ser Thr Phe Thr Asp Glu Asp Asn Ala Met Tyr |     |     |     |     |
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| Leu Leu Val Val Asn His Pro Asp Ala Lys Ser Thr Val Glu Leu Phe |     |     |     |     |
|   | 130 |     | 135 | 140 |
| Lys Phe Gln Glu Glu Glu Lys Ser Leu Leu His Leu Lys Thr Ile Arg |     |     |     |     |
| 145   |     | 150 |     | 155 |
| His Lys Leu Leu Pro Asn Leu Asn Asp Ile Val Ala Val Gly Pro Glu |     |     |     |     |
|   | 165 |     | 170 | 175 |
| His Phe Tyr Gly Thr Asn Asp His Tyr Phe Leu Asp Pro Tyr Leu Gln |     |     |     |     |
|   | 180 |     | 185 | 190 |
| Ser Trp Glu Met Tyr Leu Gly Leu Ala Trp Ser Tyr Val Val Tyr Tyr |     |     |     |     |
|   | 195 |     | 200 | 205 |
| Ser Pro Ser Glu Val Arg Val Val Ala Glu Gly Phe Asp Phe Ala Asn |     |     |     |     |
|   | 210 |     | 215 | 220 |
| Gly Ile Asn Ile Ser Pro Asp Gly Lys Tyr Val Tyr Ile Ala Glu Leu |     |     |     |     |
| 225   |     | 230 |     | 235 |
| Leu Ala His Lys Ile His Val Tyr Glu Lys His Ala Asn Trp Thr Leu |     |     |     |     |
|   | 245 |     | 250 | 255 |
| Thr Pro Leu Lys Ser Leu Asp Phe Asn Thr Leu Val Asp Asn Ile Ser |     |     |     |     |
|   | 260 |     | 265 | 270 |
| Val Asp Pro Glu Thr Gly Asp Leu Trp Val Gly Cys His Pro Asn Gly |     |     |     |     |
|   | 275 |     | 280 | 285 |
| Met Lys Ile Phe Phe Tyr Asp Ser Glu Asn Pro Pro Ala Ser Glu Val |     |     |     |     |
|   | 290 |     | 295 | 300 |
| Leu Arg Ile Gln Asn Ile Leu Thr Glu Glu Pro Lys Val Thr Gln Val |     |     |     |     |
| 305   |     | 310 |     | 315 |
| Tyr Ala Glu Asn Gly Thr Val Leu Gln Gly Ser Thr Val Ala Ser Val |     |     |     |     |
|   | 325 |     | 330 | 335 |
| Tyr Lys Gly Lys Leu Leu Ile Gly Thr Val Phe His Lys Ala Leu Tyr |     |     |     |     |
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| Cys Glu Leu   |     |     |     |     |
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| Met Ala Lys Leu Ile Ala Leu Thr Leu Leu Gly Met Gly Leu Ala Leu |   |    |    |
| 1   | 5 | 10 | 15 |
| ttc agg aac cac cag tct tct tac caa aca cga ctt aat gct ctc cga |   |    | 96 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Phe | Arg | Asn | His | Gln | Ser | Ser | Tyr | Gln | Thr | Arg | Leu | Asn | Ala | Leu | Arg |      |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |      |
| gag | gta | caa | ccc | gta | gaa | ctt | cct | aac | tgt | aat | tta | gtt | aaa | gga | atc | 144  |
| Glu | Val | Gln | Pro | Val | Glu | Leu | Pro | Asn | Cys | Asn | Leu | Val | Lys | Gly | Ile |      |
|     |     | 35  |     |     |     |     | 40  |     |     |     | 45  |     |     |     |     |      |
| gaa | act | ggc | tct | gaa | gac | atg | gag | ata | ctg | cct | aat | gga | ctg | gct | ttc | 192  |
| Glu | Thr | Gly | Ser | Glu | Asp | Met | Glu | Ile | Leu | Pro | Asn | Gly | Leu | Ala | Phe |      |
|     | 50  |     |     |     |     | 55  |     |     |     | 60  |     |     |     |     |     |      |
| att | agc | tct | gga | tta | aag | tat | cct | gga | ata | aag | agc | ttc | aac | ccc | aac | 240  |
| Ile | Ser | Ser | Gly | Leu | Lys | Tyr | Pro | Gly | Ile | Lys | Ser | Phe | Asn | Pro | Asn |      |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |      |
| agt | cct | gga | aaa | ata | ctt | ctg | atg | gac | ctg | aat | gaa | gaa | gat | cca | aca | 288  |
| Ser | Pro | Gly | Lys | Ile | Leu | Leu | Met | Asp | Leu | Asn | Glu | Glu | Asp | Pro | Thr |      |
|     |     |     |     | 85  |     |     |     | 90  |     |     |     |     |     | 95  |     |      |
| gtg | ttg | gaa | ttg | ggg | atc | act | gga | agt | aaa | ttt | gat | gta | tct | tca | ttt | 336  |
| Val | Leu | Glu | Leu | Gly | Ile | Thr | Gly | Ser | Lys | Phe | Asp | Val | Ser | Ser | Phe |      |
|     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |     |      |
| aac | cct | cat | ggg | att | agc | aca | ttc | aca | gat | gaa | gat | aat | gcc | atg | tac | 384  |
| Asn | Pro | His | Gly | Ile | Ser | Thr | Phe | Thr | Asp | Glu | Asp | Asn | Ala | Met | Tyr |      |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |      |
| ctc | ctg | gtg | gtg | aac | cat | cca | gat | gcc | aag | tcc | aca | gtg | gag | ttg | ttt | 432  |
| Leu | Leu | Val | Val | Asn | His | Pro | Asp | Ala | Lys | Ser | Thr | Val | Glu | Leu | Phe |      |
|     |     | 130 |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |      |
| aaa | ttt | caa | gaa | gaa | gaa | aaa | tcg | ctt | ttg | cat | cta | aaa | acc | atc | aga | 480  |
| Lys | Phe | Gln | Glu | Glu | Glu | Lys | Ser | Leu | Leu | His | Leu | Lys | Thr | Ile | Arg |      |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |      |
| cat | aaa | ctt | ctg | cct | aat | ttg | aat | gat | att | gtt | gct | gtg | gga | cct | gag | 528  |
| His | Lys | Leu | Leu | Pro | Asn | Leu | Asn | Asp | Ile | Val | Ala | Val | Gly | Pro | Glu |      |
|     |     |     |     | 165 |     |     |     | 170 |     |     |     |     |     | 175 |     |      |
| cac | ttt | tat | ggc | aca | aat | gat | cac | tat | ttt | ctt | gac | ccc | tac | tta | caa | 576  |
| His | Phe | Tyr | Gly | Thr | Asn | Asp | His | Tyr | Phe | Leu | Asp | Pro | Tyr | Leu | Gln |      |
|     |     | 180 |     |     |     |     |     | 185 |     |     |     |     | 190 |     |     |      |
| tcc | tgg | gag | atg | tat | ttg | ggg | tta | gcg | tgg | tcg | tat | gtt | gtc | tac | tat | 624  |
| Ser | Trp | Glu | Met | Tyr | Leu | Gly | Leu | Ala | Trp | Ser | Tyr | Val | Val | Tyr | Tyr |      |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |      |
| agt | cca | agt | gaa | gtt | cga | gtg | gtg | gca | gaa | gga | ttt | gat | ttt | gct | aat | 672  |
| Ser | Pro | Ser | Glu | Val | Arg | Val | Val | Ala | Glu | Gly | Phe | Asp | Phe | Ala | Asn |      |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |      |
| gga | atc | aac | att | tca | ccc | gat | ggc | aag | tat | gtc | tat | ata | gct | gag | ttg | 720  |
| Gly | Ile | Asn | Ile | Ser | Pro | Asp | Gly | Lys | Tyr | Val | Tyr | Ile | Ala | Glu | Leu |      |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |      |
| ctg | gct | cat | aag | att | cat | gtg | tat | gaa | aag | cat | gct | aat | tgg | act | tta | 768  |
| Leu | Ala | His | Lys | Ile | His | Val | Tyr | Glu | Lys | His | Ala | Asn | Trp | Thr | Leu |      |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |      |
| act | cca | ttg | aag | tcc | ctt | gac | ttt | aat | acc | ctc | gtg | gat | aac | ata | tct | 816  |
| Thr | Pro | Leu | Lys | Ser | Leu | Asp | Phe | Asn | Thr | Leu | Val | Asp | Asn | Ile | Ser |      |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     |     | 270 |     |      |
| gtg | gat | cct | gag | aca | gga | gac | ctt | tgg | gtt | gga | tgc | cat | ccc | aat | ggc | 864  |
| Val | Asp | Pro | Glu | Thr | Gly | Asp | Leu | Trp | Val | Gly | Cys | His | Pro | Asn | Gly |      |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     |     | 285 |     |     |      |
| atg | aaa | atc | ttc | ttc | tat | gac | tca | gag | aat | cct | cct | gca | tca | gag | gtg | 912  |
| Met | Lys | Ile | Phe | Phe | Tyr | Asp | Ser | Glu | Asn | Pro | Pro | Ala | Ser | Glu | Val |      |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |      |
| ctt | cga | atc | cag | aac | att | cta | aca | gaa | gaa | cct | aaa | gtg | aca | cag | gtt | 960  |
| Leu | Arg | Ile | Gln | Asn | Ile | Leu | Thr | Glu | Glu | Pro | Lys | Val | Thr | Gln | Val |      |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |      |
| tat | gca | gaa | aat | ggc | aca | gtg | ttg | caa | ggc | agt | aca | gtt | gcc | tct | gtg | 1008 |

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| Tyr | Ala | Glu | Asn | Gly | Thr | Val | Leu | Gln | Gly | Ser | Thr | Val | Ala | Ser | Val |      |  |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |      |  |
| tac | aaa | ggg | aaa | ctg | ctg | att | ggc | aca | gtg | ttt | cac | aaa | gct | ctt | tac | 1056 |  |
| Tyr | Lys | Gly | Lys | Leu | Leu | Ile | Gly | Thr | Val | Phe | His | Lys | Ala | Leu | Tyr |      |  |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |      |  |
| tgt | gag | ctc | taa |     |     |     |     |     |     |     |     |     |     |     |     | 1068 |  |
| Cys | Glu | Leu |     |     |     |     |     |     |     |     |     |     |     |     |     |      |  |
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| Met | Ala | Lys | Leu | Ile | Ala | Leu | Thr | Leu | Leu | Gly | Met | Gly | Leu | Ala | Leu |  |  |
| 1   |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |     |  |  |
| Phe | Arg | Asn | His | Gln | Ser | Ser | Tyr | Gln | Thr | Arg | Leu | Asn | Ala | Leu | Arg |  |  |
|     |     | 20  |     |     |     |     |     | 25  |     |     |     | 30  |     |     |     |  |  |
| Glu | Val | Gln | Pro | Val | Glu | Leu | Pro | Asn | Cys | Asn | Leu | Val | Lys | Gly | Ile |  |  |
|     |     | 35  |     |     |     |     | 40  |     |     |     | 45  |     |     |     |     |  |  |
| Glu | Thr | Gly | Ser | Glu | Asp | Met | Glu | Ile | Leu | Pro | Asn | Gly | Leu | Ala | Phe |  |  |
|     | 50  |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |     |  |  |
| Ile | Ser | Ser | Gly | Leu | Lys | Tyr | Pro | Gly | Ile | Lys | Ser | Phe | Asn | Pro | Asn |  |  |
| 65  |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |     |  |  |
| Ser | Pro | Gly | Lys | Ile | Leu | Leu | Met | Asp | Leu | Asn | Glu | Glu | Asp | Pro | Thr |  |  |
|     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |     |  |  |
| Val | Leu | Glu | Leu | Gly | Ile | Thr | Gly | Ser | Lys | Phe | Asp | Val | Ser | Ser | Phe |  |  |
|     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |     |  |  |
| Asn | Pro | His | Gly | Ile | Ser | Thr | Phe | Thr | Asp | Glu | Asp | Asn | Ala | Met | Tyr |  |  |
|     | 115 |     |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |  |  |
| Leu | Leu | Val | Val | Asn | His | Pro | Asp | Ala | Lys | Ser | Thr | Val | Glu | Leu | Phe |  |  |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |  |  |
| Lys | Phe | Gln | Glu | Glu | Glu | Lys | Ser | Leu | Leu | His | Leu | Lys | Thr | Ile | Arg |  |  |
| 145 |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |     |  |  |
| His | Lys | Leu | Leu | Pro | Asn | Leu | Asn | Asp | Ile | Val | Ala | Val | Gly | Pro | Glu |  |  |
|     |     | 165 |     |     |     |     |     | 170 |     |     |     |     | 175 |     |     |  |  |
| His | Phe | Tyr | Gly | Thr | Asn | Asp | His | Tyr | Phe | Leu | Asp | Pro | Tyr | Leu | Gln |  |  |
|     | 180 |     |     |     |     |     | 185 |     |     |     |     | 190 |     |     |     |  |  |
| Ser | Trp | Glu | Met | Tyr | Leu | Gly | Leu | Ala | Trp | Ser | Tyr | Val | Val | Tyr | Tyr |  |  |
|     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |     |  |  |
| Ser | Pro | Ser | Glu | Val | Arg | Val | Val | Ala | Glu | Gly | Phe | Asp | Phe | Ala | Asn |  |  |
|     | 210 |     |     |     | 215 |     |     |     |     |     | 220 |     |     |     |     |  |  |
| Gly | Ile | Asn | Ile | Ser | Pro | Asp | Gly | Lys | Tyr | Val | Tyr | Ile | Ala | Glu | Leu |  |  |
| 225 |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |     |  |  |
| Leu | Ala | His | Lys | Ile | His | Val | Tyr | Glu | Lys | His | Ala | Asn | Trp | Thr | Leu |  |  |
|     |     | 245 |     |     |     |     |     | 250 |     |     |     |     | 255 |     |     |  |  |
| Thr | Pro | Leu | Lys | Ser | Leu | Asp | Phe | Asn | Thr | Leu | Val | Asp | Asn | Ile | Ser |  |  |
|     | 260 |     |     |     |     |     | 265 |     |     |     |     | 270 |     |     |     |  |  |
| Val | Asp | Pro | Glu | Thr | Gly | Asp | Leu | Trp | Val | Gly | Cys | His | Pro | Asn | Gly |  |  |
|     | 275 |     |     |     | 280 |     |     |     |     |     | 285 |     |     |     |     |  |  |
| Met | Lys | Ile | Phe | Phe | Tyr | Asp | Ser | Glu | Asn | Pro | Pro | Ala | Ser | Glu | Val |  |  |
|     | 290 |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |     |  |  |
| Leu | Arg | Ile | Gln | Asn | Ile | Leu | Thr | Glu | Glu | Pro | Lys | Val | Thr | Gln | Val |  |  |
| 305 |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |     |  |  |
| Tyr | Ala | Glu | Asn | Gly | Thr | Val | Leu | Gln | Gly | Ser | Thr | Val | Ala | Ser | Val |  |  |

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